THE FIELD OF MOLECULAR GENETICS HAS ADVANCED WITH INCREDIBLE RAPIDITY DURING THE LAST 10 TO 15 YEARS. YOU MAY WONDER WHETHER THE NEW KNOWLEDGE WILL HAVE ANY EFFECT UPON THE ETERNAL QUESTIONS OF WHO WE ARE AND WHERE WE ARE GOING.

I THINK IT WILL HAVE A MARKED EFFECT, BUT NOT AN IMMEDIATE ONE. MUCH MORE BASIC INFORMATION MUST FIRST BE OBTAINED.

THE INITIAL OBJECTIVE IS TO UNDERSTAND THE CHEMISTRY OF A NORMAL CELL. THIS LEADS NATURALLY TO AN UNDERSTANDING OF THE ABERRANT CELL, AND IS OBVIOUSLY OF GREAT IMPORTANCE TO MEDICINE.

ONE CAN PREDICT THAT A NEW AREA OF RESEARCH WILL EMERGE DURING THE NEXT 25 YEARS--THAT OF MOLECULAR EVOLUTION IN WHICH THE EFFECTS OF SYNTHETIC GENES UPON THE ECONOMY OF THE CELL WILL BE EXPLORED.

WE KNOW THAT THE MACHINERY OF THE CELL WILL ACCEPT AND FOLLOW ANY INSTRUCTIONS WRITTEN IN THE APPROPRIATE MOLECULAR LANGUAGE. THE LANGUAGE HAS BEEN DECIPHERED AND IT SEEMS PROBABLE THAT MOST, IF NOT ALL, FORMS OF LIFE ON THIS PLANET USE THE SAME LANGUAGE WITH MINOR VARIATION.

GENETIC SURGERY IS A REALITY, BOTH WITH MICROORGANISMS AND WITH MAMMALIAN CELLS. DNA FROM ONE STRAIN OF CELLS CAN BE USED TO PROGRAM A DIFFERENT CELL STRAIN, AND THE PROGRAM IS INHERITED BY THE DESCENDANTS OF THE RECIPIENTS. SIMPLE GENETIC MESSAGES CAN BE SYNTHESIZED CHEMICALLY LARGELY DUE TO THE PIONEERING STUDIES OF DR. KHORANA.

THE MAJOR POINT IS THAT IT SHOULD BE POSSIBLE IN THE FUTURE TO SYNTHESIZE GENETIC MESSAGES AND USE THEM TO PROGRAM CELLS.

IT SEEMS LIKELY THAT MAN EVENTUALLY WILL BE ABLE TO INSTRUCT HIS OWN CELLS, AND ULTIMATELY, INFLUENCE HIS OWN BIOLOGICAL EVOLUTION.